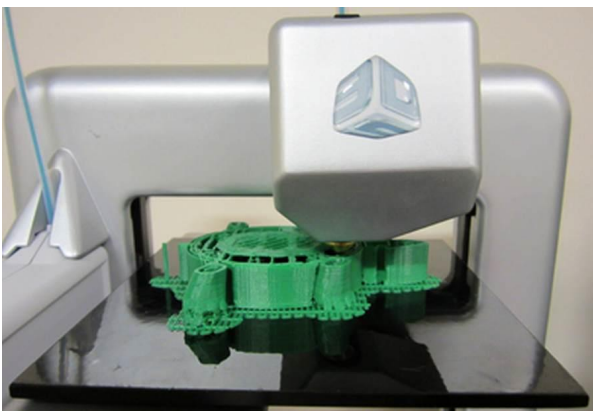# Introduction to 3D Printing & Scanning

About 3D Printing -3D Printing (additive manufacturing) is a process of making a three-dimensional solid object of virtually any shape from a digital model. 3D printing is achieved using an additive process, where successive layers of material are laid down in different shapes. 3D printing is also considered distinct from traditional machining techniques, which mostly rely on the removal of material by methods such as cutting or drilling (subtractive processes). *Source: Wikipedia*

Why "The Cube"?   We researched 3D Printers aimed at the consumer market that were easy to use and had good ratings by the user community. We chose "The Cube" from cubify.com based on price, features and ease of use. The only machine that was rated (only a little bit) better cost twice as much! Our "prints" with the machine have been successful, with a few technical glitches along the way.

How Does It Work? The Cube prints in 3D... which means that instead of putting ink onto a flat surface like regular printing, it builds up material in three dimensions to create a real object. It melts plastic filament, then draws with it in a very fine layer. It then builds another fine layer of plastic on top of this one, and then another, and another, building your idea in slices from the bottom up until you have a plastic object ready to hold. Think of it like dispensing frozen yogurt from a machine: you can build up your cone to be pretty big! 3D printing on a Cube is like that, only lets you make way cooler shapes with more detail, and isn't edible!

How Long Does it Take To Print?   The Rook Chess Piece took 1.5 hours. The bigger the object (maximum size is 5.5"x5.5") the longer it takes! The nut and bolt take 20 minutes. The cup took 2.5 hours.

To print items on the cube printer they must start out as .stl files and be converted to .cube files through the Cubify software.   **STL (STereoLithography)** is a file format native to the software created by 3DSystems. STL files describe only the surface geometry of a three-dimensional object without any representation of color, texture or other common CAD model attributes. The STL format specifies both ASCII and binary representations. Binary files are more common, since they are more compact. *Source: Wikipedia*

Resources:

www.cubify.com - the website of the printer manufacturer
www.thingaverse.com - Digital designs for physical objects.

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